

DOCKET NO.: THOM-0012
Application No.: 09/646,032
Office Action Dated: March 11, 2004

PATENT

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-17. (canceled)

18. (currently amended) A field emission ~~cathode~~ apparatus comprising a polymer ~~forming a field emission surface;~~

a field emission cathode comprising a polymer material forming an exposed field emission surface; and

an anode separated from said field emission cathode such as to be capable of causing field emission therefrom.

19. (previously presented) The field emission cathode of claim 18 wherein said polymer material is a conjugate polymer material.

20. (previously presented) The field emission cathode of claim 19 wherein said conjugated polymer material is a substituted polythiophene.

21. (currently amended) A field emission ~~cathode~~ apparatus comprising a ~~conjugate polymer material forming a field emission surface;~~

a field emission cathode comprising a conjugate polymer material forming an exposed field emission surface; and

an anode separated from said field emission cathode such as to be capable of causing field emission therefrom, wherein said conjugated polymer material comprises a polyalkylthiophene.

22. (previously presented) The field emission cathode of claim 21 wherein said conjugated polymer material comprises poly-3-octylthiophene.

23. (previously presented) The field emission cathode of claim 19 wherein said conjugated polymer material is formed as a polymer layer on a substrate.

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24. (previously presented) The field emission cathode of claim 23 wherein said polymer layer is formed from a polymer solution including a solvent, which is distributed on said substrate, said solvent being evaporated to leave behind said polymer layer.

25. (previously presented) The field emission cathode of claim 24 wherein said solvent is evaporated under vacuum.

26. (previously presented) The field emission cathode of claim 24 wherein a surface of said polymer layer includes voids which are formed by solvent evaporation.

27. (previously presented) The field emission cathode of claim 26 wherein said surface of said polymer layer is shaped by use of a mould.

28. (previously presented) The field emission cathode of claim 27 wherein said moulded surface of said polymer layer comprises a plurality of projections which promote field emission.

29. (previously presented) The field emission cathode of claim 19 wherein said conjugated polymer material is doped with an electron donor material.

30. (previously presented) A field emission display comprising:

- a field emission cathode comprising a conjugated polymer material forming a field emission surface;

- a first anode separated from said field emission cathode such as to be capable of causing field emission therefrom;

- a second anode positioned beyond said first anode; and

- a luminescent screen, wherein electrons are selectively emitted from said field emission cathode under the influence of said first anode then accelerated onto said screen with sufficient energy to cause it to luminesce by said second anode.

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31. (previously presented) A method of fabricating a field emission cathode comprising the step of forming a polymer layer comprising conjugated polymer material on a substrate, said polymer material forming a field emission surface of said field emission cathode.

32. (previously presented) The method of fabricating a field emission cathode of claim 31 further comprising the steps of:

distributing a polymer solution including a solvent on said substrate, and
 evaporating said solvent to leave behind said polymer layer.

33. (previously presented) A method of fabricating a field emission cathode comprising the steps of:

forming a polymer layer comprising conjugated polymer material on a substrate, said polymer material forming a field emission surface of said field emission cathode; and

distributing a polymer solution including a solvent on said substrate, and evaporating said solvent to leave behind said polymer layer, wherein said solvent is evaporated under vacuum.

34. (previously presented) The method of fabricating a field emission cathode of claim 33 further comprising the step of shaping the surface of the polymer layer by use of a mould.

35. (previously presented) The field emission cathode of claim 21 wherein said conjugated polymer material is formed as a polymer layer on a substrate.

36. (previously presented) The field emission cathode of claim 35 wherein said polymer layer is formed from a polymer solution including a solvent, which is distributed on said substrate, said solvent being evaporated to leave behind said polymer layer.

37. (previously presented) The field emission cathode of claim 36 wherein said solvent is evaporated under vacuum.

38. (previously presented) The field emission cathode of claim 36 wherein a surface of said polymer layer includes voids which are formed by solvent evaporation.

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39. **(previously presented)** The field emission cathode of claim 38 wherein said surface of said polymer layer is shaped by use of a mould.

40. **(previously presented)** The field emission cathode of claim 39 wherein said moulded surface of said polymer layer comprises a plurality of projections which promote field emission.

41. **(previously presented)** The field emission cathode of claim 21 wherein said conjugated polymer material is doped with an electron donor material.